REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Proposed changes to Figs. 1-3 are submitted herewith to overcome the objections thereto.

Claims 1-9 have been canceled in favor of new claims 10-14, which better define the subject matter Applicants regard as the invention. Support for the features recited in claims 10-14 is provided in the specification on page 6, line 17, through page 8, line 21, and page 21, line 1, through page 22, line 9. The new claims have been drafted to avoid the issues underlying the objections to claims 2-8.

Claims 1,2, and 4-6 were rejected, under 35 USC §102(b), as being anticipated by Steele (US 5,867,510). Claims 3, 7, and 8 were rejected, under 35 USC §103(a), as being unpatentable over Steele. Claim 9 was rejected, under 35 USC §103(a), as being unpatentable over Lockhart et al. (US 6,161,207) in view of Steele. To the extent these rejections are deemed applicable to new claims 10-14, Applicants respectfully traverse.

New claim 10 recites:

> *A communication terminal apparatus in a radio communication system performing asymmetrical communication, whereby a load on a downlink channel is heavier than a load on an uplink channel, the communication terminal apparatus comprising:*

a receiver that receives, via the downlink channel: (1) a transmission unit comprising information data and (2) position information, indicating a position of an error bit, that comprises fewer bits than the transmission unit;

a checker that checks for one or more errors in the received transmission unit and the received position information; and

a transmitter that transmits:

(a) the received transmission unit to a base station apparatus via the uplink channel, in the event that an error is detected in the received transmission unit, and

(b) a retransmission request for the position information to the base station apparatus via the uplink channel, in the event that an error is detected in the received position information.

The combined teachings of Steele and Lockhart fail to suggest the features recited in claim 10 of: (1) a receiver that receives, via a downlink channel, position information indicating a position of an error bit; (2) a checker that checks for one or more errors in the received position information; and (3) a transmitter that transmits: (a) a received transmission unit to a base station apparatus, via an uplink channel, in the event that an error is detected in the received transmission unit, and (b) a retransmission request for the position information to the base station apparatus, via the uplink channel, in the event that an error is detected in the received position information.

Instead of such features (1)-(3), Steele discloses in Fig. 6 a method of detecting errors in a received signal and decoding and processing an encoded common access channel (CAC) information

unit for use in correcting the detected errors (Steele col. 7, lines 44-46). According to this method, a mobile station receives a modulated radio frequency (RF) signal, which has an interleaved and scrambled encoded CAC information unit modulated thereon (col. 7, lines 46-50). The modulated RF signal is demodulated to regenerate the interleaved and scrambled encoded CAC information unit, which is then descrambled and deinterleaved to produce the encoded CAC information unit received by the mobile station (col. 7, lines 50-55). A Bose-Chaudhuri-Hocquenghem (BCH) syndrome generator generates, using a plurality of received CAC data portions and a plurality of BCH error correction codes, a plurality of BCH syndromes corresponding to the plurality of CAC data portions (col. 7, lines 61-66). Each BCH syndrome is generated by multiplying its respective CAC data portion and its corresponding BCH error correction code with a BCH generator matrix (col. 7, line 66, through col. 8, line 2).

If a generated BCH syndrome has a non-zero value, it is likely that the corresponding CAC data portion has an error (col. 8, lines 4-6). On the other hand, if a generated BCH syndrome has a value of zero, it is likely the corresponding CAC data portion does not have an error (col. 8, lines 6-8). Each BCH syndrome having a non-zero value uniquely defines the position of a single bit error in the corresponding CAC data portion received

by the mobile station (col. 8, lines 13-15). A BCH corrector uses the BCH syndromes and a correction table to correct the single error that may exist in each of the plurality of CAC data portions received by the mobile station (col. 8, lines 15-18).

In summary, Steele discloses a mobile station that receives a transmission signal having both an information content to be communicated and redundant information that is related to the information content. The redundant information is used by the mobile station to detect and correct an error, introduced by the propagation environment, in the received information content.

Steele's mobile station does not receive, via a downlink channel, position information indicating a position of an error bit, as would be required by claim 10. Steele's base station cannot send such position information to the mobile station because: (1) the redundant information relating to the information content to be communicated is transmitted along with the information content and (2) the base station has no way of knowing before the transmission the particular bit that will be received errantly, due to the propagation environment. If in fact Steel's system could predict the particular bit that would be received errantly, the base station could simply change the value of the symbol communicating this bit so that the bit would be received correctly. In such case, Steele's system would have

no need to send any redundant information whatsoever, including position information indicating a position of an error bit.

In other words, the somewhat random nature of the noise in the propagation channel makes it impossible to predict, prior to transmission, the particular bit that will be affected by the noise during transmission so that it is received errantly by a mobile station. Since the only redundant information suggested by Steele is that related to, and transmitted with, the information content to be communicated, it is not possible for this redundant information to identify the position of the bit error in the information content unless the propagation characteristics of the channel are entirely deterministic. And if the channel characteristics are entirely deterministic, there is no need to communicate redundant information because the transmission signal may be adjusted to compensate for the known characteristics of the propagation channel.

From the above discussion, it necessarily follows that Steele cannot suggest the claimed feature whereby a receiver receives, via a downlink channel, position information indicating a position of an error bit. And since Steele does not suggest such position indicating information, it necessarily follows that Steele cannot suggest the claimed features of: (1) a checker that checks for one or more errors in the received position

information and (2) a transmitter that transmits a retransmission request for position information to a base station apparatus, via an uplink channel, when an error is detected in the received position information.

Moreover, Steele does not suggest a transmitter that transmits a received transmission unit to a base station apparatus, via an uplink channel, when an error is detected in the transmission unit as it is received from the base station. The Office Action proposes that Steele discloses a mobile station having a transmitter for transmitting or returning transmission data to a base station (Office Action page 3, second to last paragraph).

However, the Office Action's proposal does not address the feature actually recited in claim 1 nor that now recited in claim 10. In both instances, the transmission unit at issue (i.e., to be transmitted) is one that was previously received by the transmitting unit. Steele does not suggest a communication terminal that transmits a transmission unit, having a detected error, that is received from a base station, through a downlink channel, back to the base station through an uplink channel, as would be required by claim 10. Assuming, *arguendo*, that Steele does suggest a mobile station that both receives data from a base station and transmits different data back to the base station, as

apparently proposed in the Office Action, this feature is not similar to the claimed feature described above.

Lockhart is cited in the Office Action only for teaching a communication unit having a transceiver, a processor and a storing unit, wherein the processor includes a CRC error check device and a CRC generator coupled to the storing unit and a NAK unit (Office Action page 6, last paragraph). This proposed teaching does not cure the above-described deficiencies of Steele.

In accordance with the above discussion, Applicants submit that the combined teachings of Steele and Lockhart do not suggest the subject matter defined by claim 10. More specifically, the combined teachings of Steele and Lockhart fail to suggest the features recited in claim 10 of: (1) a receiver that receives, via a downlink channel, position information indicating a position of an error bit; (2) a checker that checks for one or more errors in the received position information; and (3) a transmitter that transmits: (a) a received transmission unit to a base station apparatus, via an uplink channel, in the event that an error is detected in the received transmission unit, and (b) a retransmission request for the position information to the base station apparatus, via the uplink channel, in the event that an error is detected in the received position information.

Therefore, allowance of claim 10 and all claims dependent therefrom is warranted.

The benefits provided by the present invention may be better appreciated from the following discussion. As generally recited in new claim 10, a first feature of the present invention is that, in a radio communication system performing asymmetrical communication, whereby a downlink channel has a heavier load than an uplink channel, a communication terminal apparatus has (i) a checker for checking errors in a transmission unit and in position information, and (ii) a transmitter for transmitting a received transmission unit to a base station apparatus via the uplink channel when an error is detected in the transmission unit and for transmitting a retransmission request for the position information to the base station apparatus via the uplink channel when an error is detected in the position information.

That is, the first feature of the present invention is that the checker in the communication terminal apparatus is capable of detecting two types of errors, and the communication terminal apparatus changes what is transmitted to the base station apparatus depending on which type of error is detected. This first feature of the present invention provides the advantage of reducing the load on the downlink channel in asymmetrical communication.

A second feature of the present invention focuses on the fact that the communication terminal apparatus of the present invention is used in a radio communication system performing asymmetrical communication, whereby a downlink channel has a heavier load than an uplink channel. That is, the second feature of the present invention is that each transmission unit is transmitted only once from the base station apparatus to the communication terminal apparatus, regardless of whether an error occurs in the downlink channel.

As generally recited in new claim 11, the above-described second feature of the present invention is that a receiver receives each transmission unit only once via the downlink channel regardless of whether an error occurs in the downlink channel. This second feature of the present invention provides the advantage of further reducing the load on the downlink channel and supporting highly efficient asymmetrical communication.

As generally recited in new claim 12, a third feature of the present invention is that the transmitter transmits each transmission unit, in which an error is detected by the checker, to the base station apparatus only once via the uplink channel. Thereafter, the transmitter does not transmit the transmission unit to the base station apparatus. Instead, the transmitter

transmits a retransmission request for position information repeatedly to the base station apparatus via the uplink channel until no error is detected in the position information.

That is, the third feature of the present invention is to transmit each transmission unit in which an error is detected only once. After that, when an error occurs in the position information, a retransmission request is transmitted for the position information instead of transmitting the transmission unit. According to the present invention, transmission processing is thus performed in the two stages of transmitting a transmission unit and transmitting a retransmission request for position information. In addition, according to the present invention, when an error occurs in the position information, a retransmission request that contains fewer bits than the transmission unit is transmitted. These features of the present invention provide the advantage of enabling efficient use of the uplink channel.

The present invention thus focuses on the fact that a downlink channel has a heavier load than an uplink channel and is configured to reduce the load on the downlink channel and enable efficient use of the downlink channel.

Furthermore, as generally recited in new claim 13, a fourth feature of the present invention is that, when there is no

information data to be transmitted to the base station apparatus, the transmitter transmits a transmission unit in which en error is detected by the checker to the base station apparatus via the uplink channel. The present invention as claimed in new claim 13 is configured to transmit a transmission unit with an error only when there is room in the uplink traffic. This fourth feature of the present invention provides the advantage of transmitting a transmission unit without affecting information data transmission in the uplink channel (that is, normal uplink channel data communication).

As generally recited in new claim 14, a fifth feature of the present invention is that, when no error is detected in position information, an error in a transmission unit is corrected based on this position information. This fifth feature of the present invention provides the advantage of enabling error correction in the transmission unit based on flawless and accurate position information.

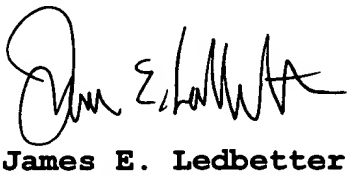
By contrast with the present invention, neither Steele nor Lockhart is premised on asymmetrical communication in which a downlink channel has a heavier load than an uplink channel. Steele and Lockhart thus fail to contemplate reducing the load on the downlink channel and thus fail to disclose or suggest the above-noted first feature of the present invention. Steele and

Lockhart also fail to disclose or suggest any of the above-noted second to fifth features of the present invention. The present invention is therefore not obvious from the inventions of the applied references, and it is therefore not possible to derive the present invention from these references.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



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